Sheldrake, Sean

From: BAYUK Dana [BAYUK.Dana@deq.state.or.us]
Sent: Monday, August 12, 2013 5:04 PM
To: John Edwards
Cc: Ben Hung; 'Pradeep Mugunthan'; Michael Riley; John Renda; Carl Stivers; Rob Ede; 'Kerry Gallagher'; James Peale; Sheldrake, Sean; Peterson, Lance; Scott Coffey <coffeyse@cdmsmith.com>; GAINER Tom; LARSEN Henning
Subject: NW Natural, Initial General Comments on Draft Model Update Report and Draft Test Plan

Good afternoon John.

DEQ completed preliminary reviews of the following documents:

- "Hydraulic Source Control and Containment System Groundwater Model Update Report - NW Natural Gasco Site," dated July 2013 (received via e-mail on July 29, 2013 [Draft Model Update Report]); and
- "Groundwater Source Control Extraction System Test Plan - NW Natural Gasco Site," dated August 2013 (received via e-mail August 1, 2013 [Draft Test Plan]).

Anchor QEA, LLC (Anchor) prepared both documents on behalf of NW Natural.

As requested, this e-mail provides DEQ's feedback on the documents to assist Anchor with preparing for this Thursday's (8/15) workshops. In addition, this e-mail provides our initial general comments regarding the content and completeness of the submittals. The content and completeness of the submittals is discussed first.

Please note that EPA also completed an initial review of the Draft Model Update Report and Draft Test Plan. EPA's comments are provided after my contact information. In addition to supporting DEQ's general comments, EPA's e-mail provides additional more specific comments for discussion during the workshops.

INITIAL GENERAL COMMENTS

Based on our preliminary reviews of the Model Update Report and Test Plan, DEQ concludes both documents are incomplete. The most significant information items that are lacking are mentioned below by submittal.

Draft Model Update Report

The Draft Model Update Report does not provide sufficient documentation of model development. During a meeting March 18th, DEQ requested that the Draft Model Update Report document all aspects of model development. DEQ's e-mail sent April 8, 2013 lists the information items needed to address our request. Based on DEQ's review, the Draft Model Update Report lacks the following:

- Discussions regarding the underlying assumptions and limitations associated with the model input parameters.
- Boring logs for recently drilled extraction wells and performance monitoring wells.

DEQ considers both items to be necessary for us to complete our review the Draft Model Update Report. As indicated in our 4/8/13 e-mail, DEQ believes discussions of assumptions and limitations are especially important for documenting model development.

Draft Test Plan

DEQ's request for information on the test plan is laid-out in our April 23, 2013 e-mail. In general, the Draft Test Plan does not provide the information DEQ requested in that e-mail. Based on the results of previous field testing, and our understanding of meeting discussions and correspondence, DEQ expected the Draft Test Plan to present a rigorous plan for testing the hydraulic control and containment (HC&C) system.

DEQ acknowledges that some of the information we requested is mentioned in the Draft Test Plan. However based on DEQ's review the document lacks sufficient detail regarding essential aspects of HC&C system test planning and preparation, including identification of data needs and data collection objectives, and indicating how and when during testing data collection objectives might be met (i.e., decision points).

For example, DEQ indicated a data need for HC&C system testing is to evaluate NW Natural's design objectives for the upper extraction wells located within the portion of shoreline Segment 1 where DNAPL occurs. Other than indicating these wells will be turned on 24-hours ahead of the remaining extraction wells in the HC&C system, no additional information is provided about the purpose of this initial test step and/or the objectives of operating the wells for the specified period of time or how the information will be used during the system testing to follow.

In addition, the Draft Test Plan does not consider certain comments DEQ provided previously. For example, the test plan indicates hydraulic capture offshore and of the deep Alluvium WBZ will rely on the model simulations. DEQ previously indicated this assessment should rely on water level data. In other words, water level data should be used to evaluate and/or confirm model predictions.

NEXT STEPS

As indicated above, DEQ considers the Draft Model Update Report and Draft Test Plan to be incomplete and lacking information necessary for us to complete our reviews. DEQ requests that both submittals be revised and resubmitted to include this information. DEQ will provide additional more specific comments subsequent to reviewing the revised documents.

To assist Anchor in revising the Draft Model Update Report and Draft Test Plan, DEQ proposes that the workshops focus on discussing the content the two documents should contain. With this goal in mind, DEQ proposes that Test Plan discussions focus on sections 2, 3, and most of sections 4 and 5, and discussions of the Model Update Report focus on Section 2. The starting point for these discussions will be DEQ's 4/8/13 and 5/23/13 e-mails.

Please contact me with questions regarding this e-mail.

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From: Sheldrake, Sean [mailto:sheldrake.sean@epa.gov]
Sent: Monday, August 12, 2013 10:41 AM
To: BAYUK Dana
Cc: Peterson, Lance
Subject: NW Natural, August Monthly Meeting and Source Control Workshops

Hi Dana, Here is some initial feedback – please let us know if you have any questions.

Thank you.

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Model Update Report:

1) NW Natural should include a section in the report that explains the influences/impacts for assumptions made in the model construction/updates. To clarify, more explanation is needed to point out how model assumptions are expected to influence calibration, groundwater flow through the model layers etc. Key Specific examples include:
* Describing the influence from assuming a no flow boundary on the South-Southeast side of the model for the lower alluvium have on model flow and how might it differ if this boundary was constant head.
* Describing the influence to simulated groundwater discharge from the upland area when the model assumes that only the topmost model layer interfaces with the Willamette River boundary.

2) Modeling layers assigned to the wells shown on Table 1 do not make sense for PW-9-92 and PW-10L. These wells look shallower than PW-6L, which is assigned to model layer 6, but they are identified in the table as being layer 9.

3) Table 2 indicates pumping tests were not conducted at PW-7-93, yet the text on the same page suggests it was tested.

4) Section 3.2 General Approach has very confusing text in the first two paragraphs.

5) EPA's expectation is that ground water elevation contour maps and point by point comparisons between predicted and observed groundwater elevations will be carried forward and used each time the calibrated model is used to evaluate hydraulic containment.

Test Plan:

1) There appears to be a diminished level of monitoring proposed for the lower alluvium. This layer is where a major degree of uncertainty exists in terms of modeling and evaluating control of upland groundwater discharge to the river. Because of this, monitoring in this layer and the discharge pathway, which is monitored by offshore piezometers, should be increased rather than decreased.

2) The Test Plan misses the intended purpose of this document, which is to evaluate existing site data and model uncertainties before testing. Instead, the document discusses evaluating the data after the start-up testing begins. However, the purposes of this document was to use existing Segment 2 test information to develop a more informed test plan. The document is void of any such analysis and proposes this occur after testing.

3) There is an extensive discussion on monitoring and minimizing NAPL migration, but very little discussion on evaluating gradient control. There needs to be an explanation of what the Serfes method possibly ignores, such as brief periods when inward gradient conditions are not achieved and what its implications are for meeting the RAOs. It may be insignificant, but EPA needs this information and requests the concept be explained more thoroughly.

4) Section 5.2 - Assess Effects of Pumping on DNAPL is comprised of a two sentence paragraph that states what DEQ requested and then indicates what data "the analysis" will use, but does not explain the analysis. NW Natural needs to explain/illustrate (using existing or theoretical data) how these data will be used for the analysis and what it entails.

5) Section 5.4 - Uncertainty Analysis lacks sufficient explanation. This section does not explain what the implications are "if control wells are displaying time lag that is significantly higher than the other control wells"

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